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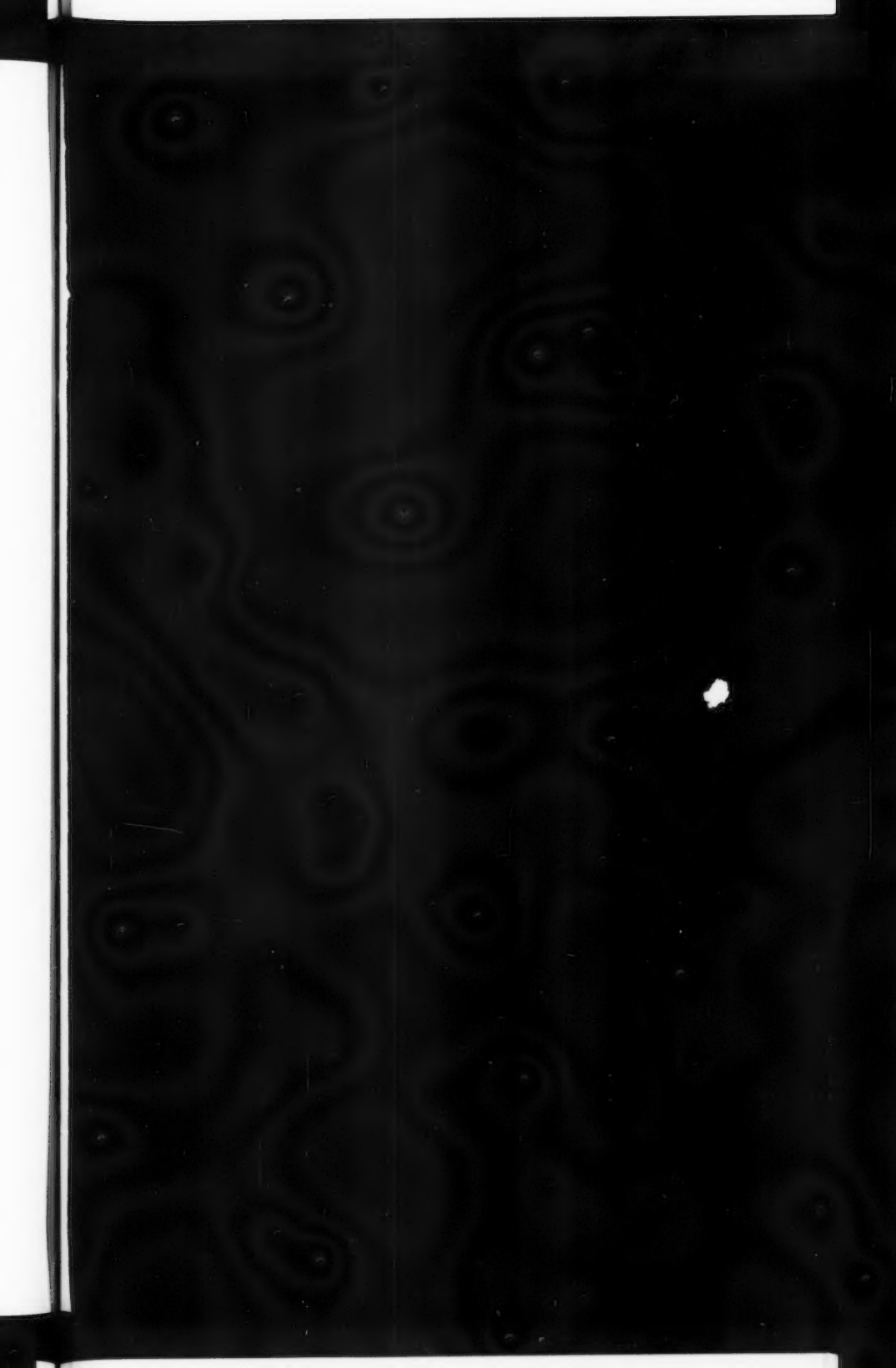


BIRD-BANDING

A JOURNAL OF ORNITHOLOGICAL INVESTIGATION

VOL. III JULY, 1932 No. 3

TREE SPARROW MOVEMENTS ON CAPE COD[1]

By O. L. AUSTIN, JR.

ON Cape Cod the Tree Sparrow, *Spizella arborea arborea* (Wilson), is a common spring and autumn transient, and a common winter visitor. The species comes so readily to grain bait that comparatively few individuals venture onto the Station grounds and fail to enter one or another of the many traps in operation. Hence the numbers of birds appearing daily in the traps is an excellent indication of the numbers present. A study of the data thus acquired since 1930 at this Station reveals several points of interest.

The Station was operated continually throughout the autumn of 1930 to the end of the year. It was closed from January 1, 1931, until it reopened on March 20, 1931, after a period of seventy-eight days. The first Tree Sparrow appeared on October 27, 1930, the next on November 22d, and then a small wave appeared between the 10th and 14th of November, after which none were taken until November 22d, when the main flight appeared. The first two individuals taken never reappeared, and of the nine birds that comprised the first small wave, but two wintered in the region. During the autumn and before operations ceased on December 31st, 80 Tree Sparrows were banded, of which 35 were still present when the station reopened in March. Of the 80 sparrows banded, three were casualties before the station closed, one suffering a brain injury in a trap, the other two being killed in the traps by shrikes. Thus 45 per cent of the banded birds remained through the winter until spring. During the spring 41 more Tree Sparrows were banded, and the total "takes" for the season, the number of times birds were handled, was 1993, an average of 16.5 times per bird, or, if we subtract from each figure the 25 birds that appeared but once, at the time they were banded, and never reappeared, 20.5 times per bird.

[1]Contribution No. 9 from the O. L. Austin Ornithological Research Station.

It is evident from the data that 80 Tree Sparrows spent the winter of 1930-31 at or very near the Station. While a few birds left each day from March 19th on, the first definite wave of departing birds left on April 9th, and at that time one new bird appeared, evidently a migrant from the south. The next marked departure, which was also heralded by another new bird coming in, left between April 19th and 21st. This left but four individuals present at the Station, one of which had had a foot amputated to study an abnormal growth on the tarsus, which had weakened and bent the leg out of shape. This bird lingered until May 17th, but the other three reported for the last time, two on May 1st, and one on May 5th.

Of the 117 birds that flew away that year (one more casualty occurred in April, a bird killed in a government trap by a rat), 21, or 18 per cent returned during the winter of 1931-32. The Station was operated continually, with the exception of five days at Christmas time, from the time the first Tree Sparrow appeared, until the last one left. One hundred and sixty-nine were taken, and these birds were handled a total of 3,245 times, an average of 19.2 times per bird. If we eliminate the 41 birds that appeared but once each, the remaining 128 birds were handled an average of 25 times apiece.

Although the average number of times each bird was handled was higher during 1931-32 than during 1930-31, the birds did not come to the traps so readily. The past winter was much milder and more open than the preceding one, and there was hence more natural food available. A comparison of the average numbers of birds taken daily for the two winters gives a better picture of the facts. Eliminating the "stragglers" on each end of each season, and reckoning from the advent of the first wintering individuals until the last marked departure, in 1930-31 Tree Sparrows were handled 1951 times during 68 days of trapping, an average of 28.7 times per day. In 1931-32, the birds were handled 3188 times during 158 days of trapping, an average of only 20.2 times per day.

But the percentage of birds banded early in the season that remained through until spring is almost identical for the two years. Of the 89 that were banded during the autumn and winter before January 1, 1932, 38, or 43 per cent, were still present after March 20, as against 45 per cent for the preceding year. Thus it is obvious that the cessation of trapping operations for seventy-eight days during the spring of 1931 had very little, if any, effect on the movements of the birds. The corollary is also evident, that the trapping had no noticeable effect on the movements.

During the autumn of 1931, the first Tree Sparrow appeared on October 22d, five days earlier than the preceeding year, and another new bird passed through on each of the next two days. The first "wave" came in on October 30th, and during the next eleven days twenty birds were taken, of which four eventually wintered. During the sixteen days between November 11th and 26th, inclusive, not a single Tree Sparrow was either observed or taken at the Station. The bulk of the wintering birds began to come in on November 27th, five days later than the preceding autumn, and they slowly drifted in until January 1st, after which the population remained fairly stationary for five weeks.

Between February 5 and February 10, 1932, twenty-one birds appeared for the first time during the 1931-1932 season. Seven of these, 33 and one-third per cent were returns from the preceding winter. Three of the seven, during the preceding winter had been "wintering birds," coming in late November or early December, and remaining until April, but the other four had been spring transients. This wave may have signalled the first northward movement of the species, but the sudden influx of birds may equally well have been due to the exceptionally inclement weather. One of the few snowstorms of the winter occurred on February 5th. Only two birds left at this time. The first period of departure started on February 25th, when two more birds appeared in the traps for the last time. During the last week in February and the first six days of March, nineteen individuals departed.

Then followed a period of little movement. During the twenty-two days from March 7th to March 29th, six new birds came in, and thirteen of the wintering birds left. April ushered in the heavier movements. During the first seven days of this month eleven birds departed, and on the 8th, 9th, and 10th, eleven more. One or two Tree Sparrows now made their "last appearances" each day, but, as during the previous spring, a marked wave left on the 19th, 20th, and 21st, when twenty-one birds departed, leaving present only five of the wintering birds. Two of these lingered until April 29th, one until May 8th, another until May 9th, and the fifth, a bird which suffered a broken radius on April 24th, lingered (although it flew well eight days after its accident) until May 15th.

There was a late flight of non-wintering birds, which came to the station on April 23d, after most of the wintering birds had departed. In the next six days, sixteen new birds came in, to remain about a week before leaving. Twelve of them left between May 1st and May 4th, and the remainder on May 8th.

A comparison of the data for the two seasons shows several interesting features. The advent of the autumn birds was marked in both cases by the irregularity of the earliest arrivals. Each year a few Tree Sparrows passed through the region a week to two weeks in advance of the main flight. A few individuals from this early flight wintered in the region each year, but the bulk of them passed on. The lateness of the advent of the wintering birds in the autumn of 1931 perhaps may be explained by the mild and warm tenor of the weather. But neither the arriving nor departing waves can be correlated with meteorological conditions, except in the vaguest and most general ways. The closest correlation seems to be with temperature. Barometric pressure, precipitation, and wind direction and velocity have no apparent immediate effect on the migratory movements, except in the extremes of bad weather. During periods of high gales, there is no apparent movement among the birds, but waves have been observed to arrive and to leave in the face of brisk winds. Rain and snow have a tendency to drive the birds to the traps for food.

In neither year could the arrival of the birds be synchronized with temperature, except that each wave was usually either preceded or followed by a drop of several degrees in the daily minimum. The more definite spring departures, however, were in each case accompanied by marked rises in the temperature. In 1931, for instance, after a daily maximum average of 45° F. for two weeks, on April 9th the temperature suddenly jumped to 55° F., and on the following day to 60° F. During this warm spell, twenty-six Tree Sparrows departed. The temperature then dropped, and daily averages of 50° F. continued until the 19th of April, when the thermograph rose to 61° F. On April 20th it reached 72° F., and the next day 69° F. These three days witnessed the departure of all but four of the remaining birds. The spring of 1932 was uniformly cold and raw. On February 25th, accompanying the first departing movements, the temperature rose to 45° F. for the first time. There was much freezing weather in March, and the daily maximum averaged 40° F. until the end of the month, when it rose to 50° F. Birds slowly filtered out daily, until on April 3d the mercury suddenly rose to 65° F. to provide a stimulus for more rapid movement. The temperature averaged 45° F. from April 6th to April 19th, during which period the exodus was desultory, and then rose again to 50° F. On April 20th the mercury climbed to 60° F., on the 21st to 62° F., and on the 22d to 66° F. Twenty-one birds departed in these three days. The spring continued cold and raw, however, and 50° F. was the daily maximum until

early May, when it again rose to 60° F. It averaged between 55° F. and 60° F. for the first two weeks of May, and the first 70° F. temperature of the year was not recorded until May 15th. To this long, drawn-out, cold spring, can be attributed the gradual movement of the birds.

To date but one of the Tree Sparrows we banded has been picked up elsewhere. This bird was banded December 3, 1931, and never repeated. It was found dead at Portland, Maine, on April 21, 1932, evidently well on its way to its northern breeding grounds, at the time when most of the wintering birds were just leaving the Cape.

U. S. Bureau of Biological Survey,
North Eastham, Cape Cod, Mass.

INDIANA BRONZED GRACKLE MIGRATION

By SAMUEL E. PERKINS, III

THE whole State of Indiana is a breeding ground for the Bronzed Grackle (*Quiscalus quiscula æneus*), which throughout the summer is very numerous. It nests principally in groups of evergreens, both as planted by nature and when grouped by man. Park groves of white pines have been occupied by this race in such numbers per tree that they may well be called colonial nesters. In the same trees Robins and Mourning Doves often build and rear their broods successfully without molestation from the Grackles.

The east and west Indiana watershed is situated about two-thirds up-state, the southern drainage area falling toward the Wabash and Ohio Rivers. The Ohio River flows in a general southwesterly direction till it joins the Mississippi River, which takes a more southerly course. The largest tributary to the Ohio south of Indiana is the Tennessee River, which flows substantially northwest, across western Kentucky to Paducah after flowing west across Alabama and the northeast corner of Mississippi and due north across Tennessee.

Numerous bird-banding stations are in operation in the State where hundreds of adult Bronzed Grackles, or Crow Blackbirds, have been banded. Some fledglings have also been tagged. Banding stations in Indiana which have reported southern recoveries of this race that have come to my attention (the first being in 1925) are well distributed over the State and are located as follows (see also map I), the column of capitals refers to location of stations shown on map:

	Location of Station	*Operator*
B	West Lafayette	Dr. L. A. Test
E	Crawfordsville	Mr. Frank C. Evans
A	Carmel	Mrs. Sue Sims
C	Noblesville	Dr. Earl Brooks
D	Muncie	Harold A. Zimmerman
G	Greensburg	Mrs. Anna C. Goddard
F	Indianapolis	Mrs. Elsa K. Glossbrenner
	"	Mrs. Belle Brown
	"	Mrs. Georgia B. Thomas
	"	Miss Helen E. Clayton
	"	Linton A. Wood
	"	Samuel E. Perkins, III

The following Indiana banding stations report recoveries:

West Lafayette	10
Crawfordsville	1
Carmel	2
Noblesville	1
Muncie	2
Greensburg	2
Indianapolis	
Clayton	2
Wood	2
Glossbrenner	10
Brown	2
Thomas	7
Perkins	13

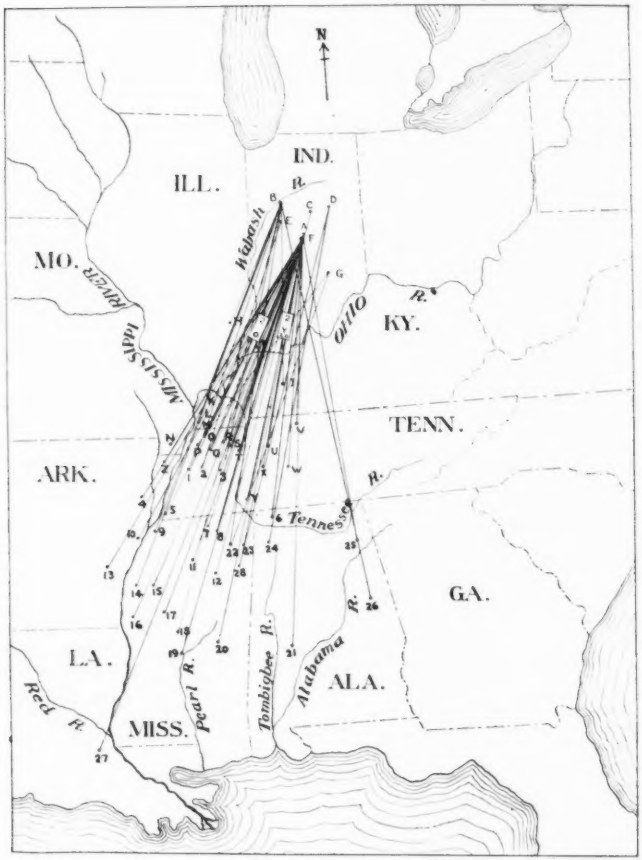
The recoveries of Bronzed Grackles to date, reported from southerly localities, are as follows:

Indiana	1
Illinois	1
Kentucky	5
Missouri	1
Arkansas	4
Tennessee	18
Louisiana	1
Mississippi	17
Alabama	5

The following table shows the months these fifty-three recoveries were banded in Indiana:

January	1
February	1
March	3
April	5
May	7
June	10
July	5
August	5
September	7
October	3
November	5
December	1

PLATE I



MAP I. INDIANA BRONZED GRACKLE RECOVERIES

The recoveries of these same birds, by months, are as follows:

October	1
November	7
December	12
January	6
February	16
March	9
April	1
May	0
June	0
July	1
August	0
September	0

There have been no out-of-State recoveries in May, June, August, September, or October, and but one each in April and July. The Grackle banded by Dr. Test in West Lafayette on the 2d of February had flown to Cub River in Hart County, Kentucky, between then and April 14th of the same year, when it was reported there. This is, to say the least, unusual and from causes unknown. The other summer record from the South is of a bird at least two years old. When we learn that this adult was caught by a cat in midsummer at Medina, Tennessee, July 5, 1927, it is a fair assumption that it had been ailing, so did not make the return journey to Indiana that spring. Its stay in the South was not normal.

In five different places in three States two recoveries or more have been reported. They are as follows:

Place recovered	*Recovered*	*Banded at*	*Banding Date*	*Bander*
Paducah, Kentucky	Dec. 2, 1927	Indianapolis	Nov. 1, 1927	Glossbrenner
	Mar. 12, 1929	West Lafayette	Apr. 4, 1925	Test
Union City, Tennessee	Jan. 4, 1928	West Lafayette	Nov. 21, 1927	Test
	Feb. 25, 1928	Indianapolis	Nov. 25, 1927	Glossbrenner
	Jan. 6, 1930	Indianapolis	Aug. 21, 1929	Glossbrenner
Savannah, Tennessee	Feb. 4, 1930	Indianapolis	May 30, 1929	Perkins
	Feb. 19, 1931	Carmel	May 28, 1930	Sims
Tupelo, Mississippi	Feb. 15, 1926	West Lafayette	Apr. 24, 1925	Test
	Feb. 7, 1930	Greensburg	Aug. 30, 1929	Goddard
Philadelphia, Mississippi	Feb. 1, 1931	Indianapolis	May 15, 1928	Brown
	Feb 2, 1931	Indianapolis	Oct. 10, 1928	Clayton

These double recoveries are seen to be almost due south of Indiana.

The oldest recovery is of a bird three years and nine months old, having been banded by Test, April 4, 1925, and recovered March 12, 1929.

The most distant recovery reported was of a bird banded by Perkins taken at Marksville, Louisiana.

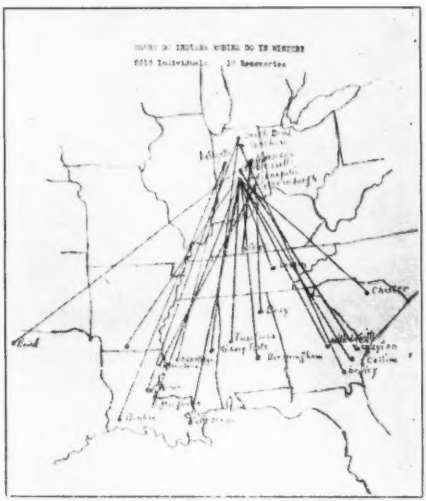
Short-time migration recoveries are:

Seven days, West Lafayette to Noble, Illinois.
One month and ten days, West Lafayette to Union City, Tennessee.
One month and twenty-five days, Indianapolis to Cleveland, Mississippi.
Two months and six days, Indianapolis to Canton, Mississippi.
Two months and nine days, West Layfayette to Clayton, Mississippi.
Three months and eight days, Indianapolis to Winburn, Mississippi.

I would call attention to the migration routes and wintering areas of some other migrating species by way of comparison. I find from my records that a Phœbe banded as a fledgling in northern Indiana was taken six months later at Zwolle, Louisiana, sixty miles south of Shreveport, in the far western part of the State.

The records of the migration of Robins which were tagged in Indiana and became out-of-State recoveries were collected by Dr. Earl Brooks of Noblesville and published in the *Indiana Audubon Society Bulletin* for 1931. A map printed therewith and reproduced here (Map II) shows that they spread out fan-

PLATE II



MAP 2. INDIANA ROBIN RECOVERIES

like and that they were taken as far west as Bairdstown, Texas, and east to Chester, South Carolina.

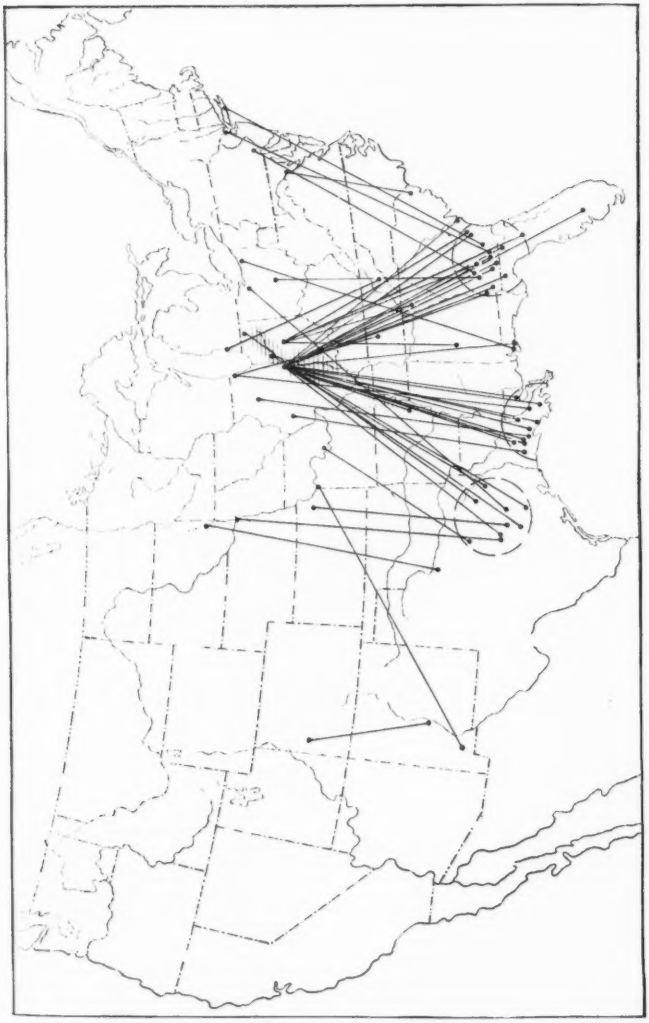
In the same way W. B. Taber, Jr., of the town of Kansas, Illinois, mapped the migration routes of Mourning Doves banded in Illinois and Indiana and published his preliminary deductions in the *Wilson Bulletin*, Vol. 42, p. 17, (republished as Map III). It will be noted that they, likewise, spread out in migration and that they congregated during the winter largely in three concentration areas, each far from the others. Indiana Doves are mostly recovered from the eastern side of Georgia near the Florida line.

From the above data it is evident that the behavior of Bronzed Grackles in the matter of journeying to their winter range is different from that of some other species, as is the range itself. The Phoebe, the Dove, and the Robin follow some other routes to their wintering places than watercourse flyways. They may use such a course part way and then diverge from it, guided thereafter through some internal directional sense, or they may migrate "as the crow flies" from the summer range. Their wintering grounds are far removed from any watercourse flyway or any valley that leads south from Indiana. On the other hand, every recovery of a Bronzed Grackle reported south of mid-Indiana has been from the valley of the Mississippi River or its important tributaries and not over fifty miles from a major river. Most records are from the immediate neighborhood of the Mississippi River itself. Every State touching the river south of the confluence of the Wabash and the Ohio has afforded recoveries and, with the exception of Alabama, no State which does not touch the Mississippi River reports recoveries. Birds taken in that State we believe followed (backtracked) the large Tennessee River, which flows into the Ohio near Paducah after crossing Tennessee and Kentucky in a northerly course (Map I).

There seems to be no rule governing the distribution of Grackles while on their winter range. They are as generally distributed over their range all winter as the range itself is limited or restricted. In November, their first month in the South, all recoveries were made within a few miles of the Mississippi River. The birds thereafter spread over all of the States heretofore referred to, as is shown by succeeding monthly recoveries. All of the recoveries from the three States west of the Mississippi River have been extremely close to this waterway, which is the State boundary in each case.

The longest journey of a recovered Purple Grackle, as reported by McCann (*Bird-Banding*, October, 1931, p. 174), is

PLATE III



MAP 3. INDIANA MOURNING DOVE RECOVERIES
SHOWING THREE MARKED WINTERING CONCENTRATION AREAS

only a little over three hundred miles, while that of the farthest Bronzed Grackle indicates a journey three times that distance—Indianapolis to Marksville, Louisiana.

The Purple Grackles from Paoli, Pennsylvania, appear to have the same habit of keeping to a restricted east-to-west winter range, not more than one hundred miles across, as shown in McCann's map in the article referred to *supra*.

The Tables A and B, which follow, give the Indiana Grackle recoveries by States and by months:

TABLE *A*, INDIANA GRACKLE RECOVERIES BY STATES[1]

		Banded	*Recovered*	*Bander*
	INDIANA			
I	Cypress	6-27-25	10- 6-25	Perkins
	ILLINOIS			
H	Noble	11- 6-27	11-13-27	Test
	MISSOURI			
N	Holland	6-24-26	2-16-28	Perkins
	KENTUCKY			
J	Cub Run	2- 4-30	4-14-30	Test
M	Oakton	4-26-27	11-26-28	Thomas
L	Bardsville	1-12-29	12-23-29	Test
K	Paducah	11-21-27	12- 2-27	Glossbrenner
K	Paducah	4- 4-25	3-12-29	Test
	ARKANSAS			
10	Helena	5-30-27	11- 8-30	Wood
Z	Armorel	8-17-27	12-28-29	Thomas
13	Almyra	9- 4-28	3- 3-29	Glossbrenner
4	Cherry Valley	9-25-28	3-15-29	Perkins

[1]Numbers and letters in first column give recovery locations shown on Map 1.

	TENNESSEE			
3	Medina	7- 2-25	7- 5-27	Thomas
1	Halls	3-23-27	11- 7-28	Perkins
U	Hurricane Mills	6-10-29	11- 8-29	Thomas
S	McKenzie	12- 7-27	12-24-29	Glossbrenner
X	Linden	6-22-26	12-19-27	Perkins
O	Union City	11-23-27	1- 4-28	Test
2	Crockett Mills	5- 2-24	1-15-25	Evans
R	Sharon	7-24-26	1-24-27	Brown
O	Union City	8-21-29	1- 6-30	Glossbrenner
Y	Savannah	5-28-30	2-19-31	Sims
Y	Savannah	5-30-29	2- 4-30	Perkins
O	Union City	11-25-27	2-25-28	Glossbrenner
Q	Trenton	6-17-28	2-18-29	Sims
W	Columbia	9-19-28	2-28-29	Perkins
V	Springfield	10- 3-29	3-25-30	Glossbrenner
P	Obion	9- 6-27	3- 8-28	Goddard
T	Huntingdon	9-14-27	3- 1-28	Glossbrenner
5	Normal	5-23-23	3-20-26	Perkins
	LOUISIANA			
27	Marksville	5-27-28	1-19-29	Perkins
	MISSISSIPPI			
14	Symonds	4-29-28	11-27-28	Test
9	Clayton	9-20-29	11-29-29	Test
19	Canton	10- 3-29	12- 9-29	Clayton
23	Fulton	8-15-29	12-13-30	Glossbrenner
7	Winburn	9-12-30	12-20-30	Perkins
15	Cleveland	11- 5-27	12-30-27	Glossbrenner
18	Thornton	4- 9-27	12-31-27	Test
12	Calhoun	3-31-27	1- 3-29	Brooks
20	Philadelphia	5-15-28	2- 1-31	Brown
20	Philadelphia	10-10-28	2- 2-31	Clayton
16	Longwood	6- 1-27	2-27-30	Glossbrenner
28	Amory	7-19-29	2- 2-30	Zimmerman
22	Tupelo	8-30-29	2- 7-30	Goddard
22	Tupelo	4-24-25	2-15-26	Test
8	LaFayette Springs	6- 6-26	2- 5-28	Thomas
17	Indianola	7-22-29	2-17-30	Thomas
11	Water Valley	6-28-28	3-12-29	Wood
	ALABAMA			
21	Tuscolusa	6-26-29	12-23-29	Perkins
25	Murray Cross	8-16-30	12- 8-30	Perkins
6	Sheffield	3-27-29	2-23-31	Perkins
24	Phil Campbell	7-19-29	2-28-30	Zimmerman
26	Lineville	6-30-28	3-13-30	Test

TABLE *B*, INDIANA GRACKLE RECOVERIES BY MONTHS

	Banded	*Recovered*	*Place*
October	6-27-25	10- 6-25	Cypress, Indiana
November	4-29-28	11-27-28	Symonds, Mississippi
	9-20-29	11-29-29	Clayton, Mississippi
	4-26-27	11-26-28	Oakton, Kentucky
	6-10-29	11- 8-29	Hurricane Mills, Tenn.
	11- 6-27	11-13-27	Noble, Illinois
	5-30-27	11- 8-30	Helena, Arkansas
	3-23-27	11- 7-28	Hails, Tennessee
December	10- 3-29	12- 9-29	Canton, Mississippi
	8-15-29	12-13-30	Fulton, Mississippi
	6-26-29	12-23-29	Tuscaloosa, Alabama
	8-16-30	12- 8-30	Murray Cross, Alabama
	9-12-30	12-20-30	Winburn, Mississippi
	8-17-27	12-28-29	Armorel, Arkansas
	1-12-29	12-23-29	Bardsville, Kentucky
	12- 7-27	12-24-29	McKenzie, Tennessee
	11-21-27	12- 2-27	Paducah, Kentucky
	11- 5-27	12-30-27	Cleveland, Mississippi
	4- 9-27	12-31-27	Thornton, Mississippi
	6-22-26	12-19-27	Linden, Tennessee
January	11-23-27	1- 4-28	Union City, Tennessee
	5- 2-24	1-15-25	Crockett Mills, Tenn.
	5-27-28	1-19-29	Marksville, Louisiana
	7-24-26	1-24-27	Sharon, Tennessee
	3-31-27	1- 3-29	Calhoun, Mississippi
	8-21-29	1- 6-30	Union City, Tennessee
February	5-15-28	2- 1-31	Philadelphia, Miss.
	10-10-28	2- 2-31	Philadelphia, Miss.
	6- 1-27	2-27-30	Longwood, Miss.
	5-28-30	2-19-31	Savannah, Tennessee
	5-30-29	2- 4-30	Savannah, Tennessee
	3-27-29	2-23-31	Sheffield, Alabama
	7-19-29	2- 2-30	Armory, Mississippi
	7-19-29	2-28-30	Phil Campbell, Alabama
	8-30-29	2- 7-30	Tupelo, Mississippi
	4-24-25	2-15-26	Tupelo, Mississippi
	11-25-27	2-25-28	Union City, Tennessee
	6- 6-26	2- 5-28	Lafayette Springs, Miss.
	7-22-29	2-17-30	Indianola, Mississippi
	6-17-28	2-18-29	Trenton, Tennessee
	9-19-28	2-28-29	Columbia, Tennessee
	6-24-26	2-16-28	Holland, Missouri
March	10- 3-29	3-25-30	Springfield, Tennessee
	6-28-28	3-12-29	Water Valley, Mississippi
	9- 6-27	3- 8-28	Obion, Tennessee
	6-30-28	3-13-30	Lineville, Alabama
	9- 4-28	3- 3-29	Almyra, Arkansas
	9-14-27	3- 1-28	Huntingdon, Tennessee
	4- 4-25	3-12-29	Paducah, Kentucky
	5-23-23	3-20-26	Normal, Tennessee
	9-25-28	3-15-29	Cherry Valley, Arkansas
April	2- 4-30	4-14-30	Cub Run, Kentucky
July	7- 2-25	7- 5-27	Medina, Tennessee

A STUDY OF TWO NESTS OF THE BLACK-THROATED GREEN WARBLER[1]

By MARGARET M. NICE and L. B. NICE[2]

PART I

IN the summer of 1931 in Pelham, Massachusetts, we had the privilege of watching two nests of the Black-throated Green Warbler from incubation to the leaving of the young. Ninety-four hours were spent in the study of the first nest, which was found July 9th, and forty-six hours at the second nest, located July 26th.

CHRONICLE OF THE JULY NEST

Early in the morning of July 9th a female *Dendroica virens virens* was met a half-mile south of my mother's house; she gave a few chirps and disappeared. I followed the direction she had taken and soon discovered her sitting on her nest, in a hemlock (*Tsuga canadensis*), fifteen feet from the ground and six feet from the trunk. The nest was well protected by sprays above, but was easily seen from below. To the east stood a grove of hemlocks and one primeval white pine (*Pinus Strobus*); in other directions the trees were largely hardwoods with considerable undergrowth. We watched the nest from a point twenty feet to the north and in full view of the bird.

Incubation. The length of the periods on and off the nest from 8:10 to 11:40 A.M.[3] July 9th were as follows (the absences being in parentheses): 26+, (24), 50, (16), 49, (26), 19+; from 2:00 to 5:00 P.M. 17+, (19), 44, (21), 42, (17), 20+. On July 10th from 8:57 to 11:57 the figures stood: 33+, (9), 34, (12), 45, (10), 37+. The average of four full incubation periods on the first day was 46 minutes, and of six absences 20 minutes. The following morning the average of two full incubation periods was 40 minutes, and of three absences 10 minutes. On the 9th the periods on the nest varied between 42 and 50 minutes, those off from 16 to 26 minutes. The next day the absences were much shorter and less irregular, ranging from 9 to 12 minutes. The percentage of time spent away from the

[1]Read in part before the 49th stated meeting of the American Ornithologists' Union at Detroit, Michigan, October 20, 1931.

[2]Part of the watching on July 16th, most of it on July 17th and 19th, and all of it on July 18th was done by L. B. N.; the rest of the field work and the writing of the paper were done by M. M. N.

[3]All hours are given in Eastern Standard Time.

nest on the 9th was 31.4, on the 10th, 17.2. One possible explanation of the shortened absences lies in somewhat cooler weather on the second day, in the afternoon of which there were heavy showers. The fact that the 10th was the last day of incubation may also have had an influence.

The female sat quietly on the nest, but left it very quickly, darting down nearly to the ground and thence flying rapidly out of sight. She left most often towards the south, but at times chose any other direction except east. She usually chipped before she returned to the nest. If she came to it from the west, she faced east during the following incubation period; if she approached from the east, she settled down facing west.

The male appeared at 9:46 on July 9th, apparently to see what was disturbing his mate, who was chipping at me, but left again at once. He sang incessantly from various positions in the grove to the east, usually from 40 to 45 yards away from the nest, occasionally coming nearer, and occasionally going so far away that we could not hear him. He gave 860 songs during the first three and a half hours in the morning, 431 songs during three hours in the afternoon, and 928 songs from 8:57 to 11:57 A.M., July 10th. Once the female left as he started to sing, and three times she did so when he came nearer than usual. Three times out of the nine he stopped singing as soon as she left the nest, probably joining her in her search for food, but twice he started singing again before her return. Although there evidently was some coöperation between the pair, the female appears on the whole to have regulated her conduct independently of her mate.

Care of the Young. On July 11th at 8:13 A.M., three minutes after my arrival, I was delighted to see the female rise and eat half an egg-shell; the last little bird had just hatched. She now sat higher than when incubating and was far more restless, often rising and digging down into the nest. At 8:25 she left, returning in five minutes with a small insect. She always "billed" the morsels before giving them to the young. All the objects that she brought were small until 4:26 and 4:46, when long caterpillars were offered, the last one finally being eaten by the female herself. During seven hours that day she brooded 63 per cent of the time in sessions of 9 to 31 minutes; she was absent from 5 to 19 minutes at a time and delivered 15 meals. The male in the meantime sang 1445 songs and never once came near the nest.

On July 12th the male's absorption in singing to the exclusion of all other duties was strikingly shown by his failure to chase off a Blackburnian Warbler (*Dendroica fusca*) that sang very

near, and also a strange male of his own species which came within a yard of the nest and which the female had to drive away, his singing in the meantime going serenely on. At 9:40 as she was brooding and her mate was singing rather near, she chipped in response to his songs four times in succession. The next day this happened on five occasions: at 7:48 she chipped 15 times, at 9:28, 3 times, at 3:05, 18 times. On July 14th she chipped twice at 9:04 and twice at 2:03; and on July 16th at 10:50, when her mate was singing very near, she gave almost an explosion of chips on the nest. It seemed to me she was trying to call him to the nest. Five times in these five days she left as his singing drew near, five times he stopped abruptly as soon as she left, but on all but one of these occasions he started again before she returned. On July 15th we climbed the tree and found the young were three in number, but still the male continued to sing, oblivious of any danger to his family.

On the 12th the female brought 17 meals in 8 hours at intervals ranging from 3 to 17 minutes; she brooded 63 per cent of the time in periods lasting from 6 to 30 minutes. Several large objects were brought in the afternoon, and once two larvæ at the same time. On the 13th, 14th, and 15th the course of events was much the same except that the female brooded less each day, 46, 31, and 8 per cent respectively of the 6 to 8 hours we watched. Meals were brought at long intervals—28 and 32 minutes on the 13th and 15th, 21 minutes on the 14th—but surprisingly large insects were brought, while two or three or four items at one feeding were often recorded. On the afternoon of the 15th a baby's head was visible above the rim of the nest for the first time. And still the male did nothing but sing. Indeed, he sang so very much that we resolved to watch the nest for a whole day, hoping to set a world's record for the number of songs counted from a single bird in one day.

It was pitch dark in the woods at 2:15 the next morning, and it was not until after 3:00 that I began to see the outline of the bushes around me. The first bird-note came at 3:28, a Scarlet Tanager's (*Piranga erythromelas*) proud song, which lasted for almost an hour. At 3:52, 33 minutes before sunrise, my Warbler started singing; 6 minutes later I noted that I could begin to see colors. He sang 201 songs and then suddenly stopped at 4:20, but began again 4 minutes later, giving 379 songs during the first hour.

The female darted off the nest at 4:14, returning in 4 minutes with a green larva. During her first hour she outdid herself by bringing 5 meals, but after that she fell back into her old rhythm with one to four meals an hour and 5 again just before

bedtime, a total of 46 during the 16 hours. Sunset came at 7:26, the male's last song and also that of the Tanager at 7:38, while the female settled down at 7:44 when it was so dark I could barely see her.

And what of our world's record? By some perversity of fate that annoying little bird hardly sang at all—or probably happened to sing too far away for us to be sure it was he—only 1313 songs in 16 hours, whereas on the 14th he had given 1519 songs in 6 hours, and on the 15th, 1680 songs in 7 hours. A really typical day should have resulted in over three thousand songs.

The 17th and 18th progressed much the same as before, the male singing a fair amount, 737 and 919 songs in five and a half hours each day, the female doing no brooding, and feeding every 23.6 and 27 minutes respectively. But on the 19th came a remarkable change. Things had been going about as usual, when at 10:30 the observer mounted the tree to inspect the infants and two hopped out; one could not be found, but the other was replaced, only to jump out again when the mother returned at 10:50, greatly exciting her. Her behavior altered at once; instead of bringing food from a distance at long intervals, she gathered it in the vicinity and fed all three babies at short intervals. During the first two hours of observation she had brought 7 meals at average intervals of 17 minutes; during the last seven and a half hours she gave 63 meals at average intervals of 7.1 minutes. From 10:00 to 11:00 Baby 1 was fed 12 times in 36 minutes, Baby 2 none during the hour, Baby 3, the one that stayed in the nest, once; from 11:00 to 12:00, Baby 1 received 2 meals, Baby 2, 6, and Baby 3, 5—again a total of 13 meals. After that the first fervor of feeding abated somewhat, and in the afternoon, the female fed from 6 to 9 times an hour, sometimes gathering food within four feet of the observer. In seven and a half hours Baby 1 received 27 meals, the others 18 meals each.

The excitement incident to the launching of two infants into the world brought the male to the scene at 11:44; instead of welcoming him, his mate rushed at him twice. Nothing daunted, 11 minutes later he reappeared with a caterpillar in his bill. Whether or not he fed at that time is not known, as the observer left at 12:00 and did not return until 1:13. It was not until 3:52 that the male was again seen; at 4:01 he fed Baby 3 in the nest—a great moment. He was back again 7 minutes later with another morsel, and at 4:40 both parents fed side by side—a charming sight. The male fed three more times, and, interestingly enough, he brought very small insects and put them far down in the throat as if he were dealing with newly hatched young.

whereas his mate popped the food into the open bills very quickly. The female gave her last meal at 7:01, the male his last song at 7:30 (4 minutes after sunset), while the Tanager sang until 7:42.

At 4:28 the next morning the male was busily singing in his favorite grove, while the female was just as busily caring for her scattered family. Baby 1 had moved to the east and could no longer be watched. The female at 4:35 went to the nest, but, instead of feeding, took the morsel to Baby *2* in the small hemlock where it had spent the night, 15 yards from the nest; at 4:42 she reversed the process, and at 5:40 repeated her first tactics. Five minutes later the male brought a green caterpillar to Baby *3* and carried away a sac, his mate in the meantime coming to the nest without food and looking at the little bird. In a few minutes she returned to the nest with a small insect, offered to feed but instead darted off to Baby *2*. Soon she got this infant to follow her 30 feet to the north into the lower branches of a large hemlock. The male fed the nest baby again, and so did the female. Immediately afterwards, at 7:13, the baby stepped out of the nest, walked unsteadily along the branch, nearly losing his balance every other moment, and settled down 8 inches away. The mother, who had been chipping at the other side of the tree, suddenly spread her wings and tail and had a fight with a Red-eyed Vireo (*Vireo olivaceus*).

At 7:25 the female came to Baby *3*, gave him a small insect and removed a sac from the limb, she chipped again and again, got a small insect, came to him, hopped over him, came back, then disappeared, all the time chipping. He was excited and tried to follow, but nearly fell three times. He then began to preen himself. At 7:39 she brought him a caterpillar, hopped on top of the nest, and carried off the last sac. She then came with a small insect, chipping and chipping, while he made frantic efforts; she did not give it to him, but hopped onto the nest, looked into it and left. At 7:54 the male came to the nest with a caterpillar, hopped onto the east rim, and then to the west rim, apparently at a loss what to do. The baby sat with his bill wide open, expectant but silent. When nothing happened, he gave a little chip, and his father went to him and fed him. Between 8:10 and 9:24 the female fed this baby four times, after the first trip returning to the nest, examining it, and perhaps finding a louse.

A curious incident took place soon after. The male came with two little insects and tried several times to give the food *to the nest;* the baby called gently; he went to him and tried to feed him like an infant, putting his bill in and out of the little bird's

throat, but without success. The female came below the baby and quivered her wings; the male descended to her with his bill still full and gave her a small morsel. He then went to the nest, and she followed; both stood on the rim, she quivering her wings. She took the food from him, picking it out of his bill; he left and at once began to sing; she went to Baby 3, but did not give him the food, taking it to Baby 2 instead.

Both babies called vigorously before their mother returned from an hour's absence. At 10:24 she fed Baby 3 with considerable chipping, and he tried to come to meet her. Three minutes later she brought him a green larva, but stood up very straight, holding it out of his reach, and then flew six feet to the west. He hurried after her as best he could, giving one little flight; she repeated the process, this time going only a foot further, then rewarded him. At 10:32 the male came to the nest, tried several times to feed his insect there, looked about for the little bird, and went to feed him. Seven minutes later the female brought a caterpillar, but again held it up out of reach; the baby, however, appeared satisfied and did nothing. She left, and he took a nap with his head under his wing. At 11:08 the female came, looked at the nest, and fed the baby.

At 11:33 she chipped again and again, and the baby answered; she came into the home tree with no food, constantly chipping. She found a caterpillar in the tree, came to the baby, but flew off a little way, still chipping. Baby started out, making progress mostly by hops but sometimes by tiny flights; after several tumbles he landed on a limb six feet below the nest. His mother chipped near by with an insect, but would not feed. Baby made a mighty effort and fell to the ground; mother darted down beside him and then flew north. Baby started after her, she keeping near him, usually above, chipping and dangling the worm before him. At 11:43 she fed, but immediately got another caterpillar, and the same play was reënacted. He had grown more expert and climbed into a little pine tree fifty feet from his starting point, where he rested on his laurels.

I left and did not return until 2:15, when we caught both babies to band them, putting the band on the right leg in one case, the left in the other. At the first excitement the female dashed about near by, holding her wings straight up and her tail spread, but displayed only a little the second time. She tried to entice each baby to safer perches by following it, chipping, showing it a caterpillar, and mounting bushes as if encouraging it to do likewise. She fed Baby 2 when only two yards from us. The latter made one flight of about 12 feet.

The male sang but did not appear, and the same was true

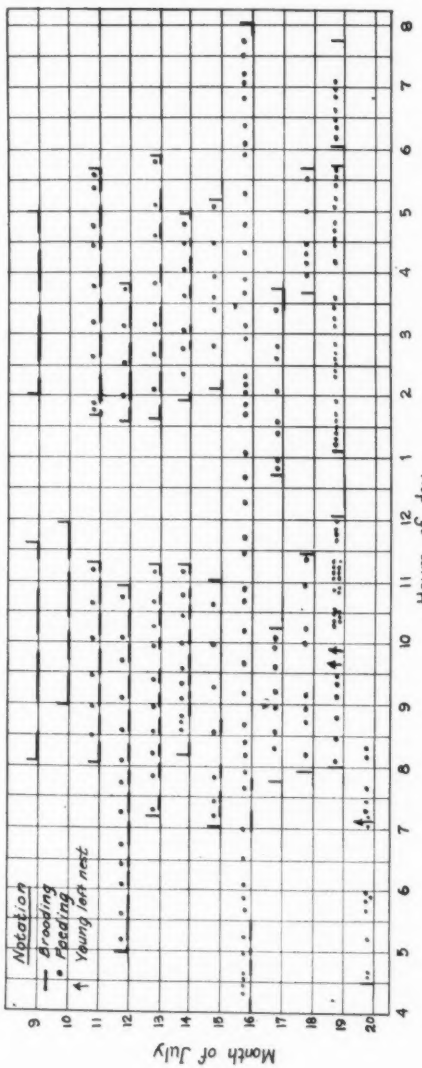


CHART I

INCUBATION, BROODING AND FEEDING OF THE FIRST FEMALE

TABLE I

ACTIVITIES OF THE PARENTS AT THE JULY NEST

			THE FEMALE							THE MALE	
			BROODING		FEEDING		EXCRETA		FEEDING	SINGING	
July	*Hours*	*Per cent of time on nest*	*Average length brooding*	*Average time off*	*Number times fed*	*Rate feeding in minutes*	*Eaten*	*Carried*		*Total number of songs*	*Average per hour*
9	6.5	68.6	46.	20.5						1291	198
10	3.	82.8	40.	10.0						928	309
11	7.	63.1	20.2	11.1	15	28.0	2	0	0	1445	207
12	8.	62.7	18.7	11.0	17	28.2	4	0	0	1067	134
13	8.	46.0	14.3	16.0	17	28.2	11	0	0	873	109
14	6.	31.4	8.6	13.8	17	21.2	8	4	0	1519	253
15	7.	7.8	8.2	22.3	13	32.3	3	5	0	1680	240
16	16.	7.6	14.5		46	20.9	3	19	0	1313	82
17	5.5				14	23.6	0	6	0	734	134
18	5.5				13	27.0	0	2	0	919	167
19	10.				70	8.6	0	4	6	748	75
20	8.5				23		0	3	5	943	111
21	1.									293	293
22	1.									70	70
25	1.									182	182
Total	94				245	19.7	31	43	11	14005	149

during hour visits on three later dates. The female fed Baby 3—banded on the left leg—in the hemlock 22 feet west of the nest on July 21st (10:27 to 11:27 A.M.) and in another hemlock about 30 feet farther west on July 22d (10:10-11:10 A.M.). On the 25th from 9:07 to 10:07 I saw none of the family but the male gave 293 songs; on the 29th late in the afternoon I heard nothing from him. We believe he took no further interest in his family after Baby 3 left the home tree.

Discussion of Brooding and Feeding. The course of events at this nest is graphically shown in Chart 1, while the main features are summarized in Table 1.

Since this study offered the unusual opportunity to observe the rhythm of brooding without the disturbing factor of visits from the male, the length of the periods on and off (the latter in parentheses) will be given for the first five days.

July 11, A.M. (5) 15 (10) 23 (8) 26 (10) 23 (14) 21 (9); P.M. 31 (16) 21 (10) 21 (15) 21 (19) 11 (9) 20 (14) 9 (5).

July 12, A.M. (10) 19 (3) 22 (9) 13 (5) 6 (15) 23 (9) 19 (8) 12 (11) 17 (12) 17 (15) 21 (13) 14 (8) 30 (13); P.M. (9) 29 (7) 19 (17) 21 (15).

July 13, A.M. 13 (19) 12 (10) 10 (12) 13 (10) 14 (12) 12 (22) 13 (9) 12 (9) 12 (18); P.M. (13) 16 (18) 16 (12) 20 (20) 23 (23) 17 (17) 12 (31).

July 14, A.M. 15 (4) 6 (7) 6 (11) 13 (13) 11 (16) 9 (10) 7 (18); P.M. 8 (18) 4 (32) 8 (16) 12 (14) 4 (15).

July 15, A.M. 3 (7) 11 (14) 11 (34) 8 (34).

To summarize, the periods on the nest ranged as follows: July 11, 9 to 31 minutes; July 12, 6 to 30; July 13, 12 to 33; July 14, 4 to 15; and July 15, 3 to 11. The periods off: July 11, 5 to 19 minutes; July 12, 3 to 17; July 13, 9 to 23; July 14, 4 to 32; and July 15, 7 to 34.

On July 11th the female brooded after all but one of her 15 feedings, on the next two days after every one of her 34 feedings, on the 14th after 13 of 17, on the 15th after 4 of 13, and on the 16th after 5 of 46.

Her brooding showed a gradual and consistent decrease from 63.1 per cent of the time on the first day to 7.8 per cent for the sixth. If the nest had been watched from dawn to dark every day these percentages would have been higher, especially after the second day, as the young are naturally brooded more in the cool mornings. With the exception of the 16th, when brooding was at its very end, the average length of the periods decreased each day, while the average length of periods off correspondingly increased, except that the figure for the 13th is larger than that for the 14th.

The female fed at practically half-hour intervals on the first three days and also on the fifth, at 21-minute intervals on the fourth and sixth days (at 24-minute intervals if the first two and last two hours are omitted), at 24-minute intervals on the seventh day, 27 minutes on the eighth day, and 8.6 minutes on the 9th day.

The slow feeding at first was the natural consequence of uninterrupted brooding, a 20-minute period on the nest and 11 minutes off bringing the feedings during the first two days at half-hour intervals. As the young grow older, they need less brooding and more food. Since the female's instinct to brood after every feeding still held during the third day, she might have met the situation by very much shorter individual broodings and more numerous meals; instead she shortened her brooding periods by about a fourth, lengthened the absences correspondingly, and brought *much larger meals at the same slow pace as before*. Evidently this was a simpler adjustment than the other would have been. The next day she did increase her rate markedly.

So far we can see reasons for her conduct, but why the slowest feeding of her whole career should have occurred on July 15th is a mystery. During the first two days but one meal with two items was recorded, 5 large items and 8 small ones were noted; during the next 6 days at 30 of the 120 meals two items were brought, at 20 three, and at 3 an even larger number; only two small items were noted and 55 large ones. On the last two days, on the contrary, of 93 meals only one was double and one triple, while small objects were recorded more often than large ones.

The revolutionary change that took place in this female's feeding behavior on July 19th was evidently due to the extraordinary stimulus afforded by the greatly increased movement and sound of the young that had just left the nest. It is well known that parental devotion is at its peak just before and after this event. Could this be in response to the lively reactions of the young?

The number of seconds spent at the nest in feeding and inspection (the occasions when she stood from 2 to 4 minutes delousing being omitted) was measured by stop watch in 122 cases. In general the time decreased, but not always consistently. The medians for the ten days were as follows: 47, 35, 53, 27.5, 23, 28, 20, 15, 25, 5. If the first nine days are grouped in threes, the results are: July 11th to 13th, range 20 to 167 seconds, median 47; July 14th to 16th, range 13 to 100 seconds, median

28; July 18th to 20th, range 11 to 45, median 23. On the 20th there were but three visits timed, each 5 seconds long.

On leaving the nest the female went most often to the south (67 times), then to the north (32 times), then the west (22 times), and finally the east (15 times). She returned most often from the west and north. The direction in which she left had no relation to that in which she returned. On the nest she faced east and west about equally often.

(*To be continued*)

ARE NESTING TERRITORIES ALWAYS AVAILABLE FOR RETURNING JUVENILE SONG SPARROWS?

By CHARLES L. WHITTLE

F. W. CHAPMAN in the second revised edition of his "Handbook of Birds of Eastern North America," under the heading "Historical Review," pp. XXXIV and XXXV, remarks on the "apparent failure of migrants to return to the place of their birth" as one of the conclusion to be drawn from the work of bird-banders. While it is not definitely stated, I assume that Dr. Chapman refers to the apparent failure of young birds to return to the place of their birth to nest the first nesting season following their birth. That the published banding records to date lend considerable support to such an influence is certain, but I know of no intensive study of any species having been made in this connection.

It may be that we are too hasty in coming to a conclusion, for many young birds, juveniles we will call them, may return to their birthplaces the following season and yet not nest there, especially uncolonizing species and those exacting strict territorial areas. Perhaps all the factors entering into the matter of nesting have not been taken into account. It does not follow that because young birds return to the place of their birth and attempt to nest there, or in the immediate vicinity, that *opportunity* exists for them to do so. There are at least four factors which have a bearing on the matter:

(1) the great loss of juvenile birds during their first year, a continuation during their first two migrations of the fatalities due to inexperience so common before their migration begins;

(2) the well-established fact of high returning ratios of old birds as compared with young birds, which may reasonably indicate high survival ratios also;

(3) the well-known fact in case of some species that the old birds, particularly the males, precede the young on their migration to their nesting grounds, where, in the case of birds returning to places where they nested previously, they preëmpt former nesting territories; and

(4) scarcity of nesting territories or nesting sites.

Of these four factors, the most important and testable appear to be the third and fourth ones, and their application in the case of Eastern Song Sparrows at my banding station during the nesting seasons of 1931 and the early part of 1932 will be pointed out below in this connection.

Before doing this, however, reference should be made to an

earlier, theoretical article by Whittle appearing in the *Bulletin of the Northeastern Bird-Banding Association* under the title, "The Bearing of a Knowledge of Nest-Spacing among Birds on the Work of the Bird-Bander," see Vol. II, 1926, pp. 78 to 81. In this article consideration is given the question: To what extent do birds born the previous season return to their place of birth to nest? (page 79). Reference is made to the possibility that young returning Barn Swallows might find the available territories within the barn in which they were born already occupied by returning adults which had arrived earlier, thus forcing them to nest elsewhere. No confirmatory observations, however, are offered to support this hypothesis. Stress is laid on the fact that the percentage of recorded adult birds of several species returning to my banding station in Cohasset, Massachusetts, during the summer season greatly exceeded the percentage of returning young birds.

The following data on this problem were gathered at my banding station in Peterboro, New Hampshire: Between July 13 and August 13, 1931, I banded nineteen Song Sparrows. Of these, eighteen were young birds. None was banded as a nestling. That these eighteen birds were young-of-the-year was shown by their behavior and by their unworn plumage. Fourteen of them carried hippoboscid flies, either *Ornithomyia avicularia* or *Ornithoica confluens*, which in my experience occur only on young birds recently out of the nest.

Of my four nesting Song Sparrows in 1931, two were returns-2, having been banded in 1929, and one was a return-1, banded as an adult in 1930. These birds remained throughout the nesting season and were three of the four birds nesting in the two territories within two hundred feet of my station. The opportunity for juveniles to nest in the nesting territories occupied in 1931 was accordingly limited to *one* bird, but no juvenile bird banded in 1930 was taken as a return in 1931, so that the age of the fourth bird is unknown.

The case for 1932 was strongly contrasted with that of 1931, for out of the eighteen juvenile Song Sparrows banded in 1931, four were returns in 1932—B69371, B69411, B69413, and B69417—and were recorded three on April 8th and one on April 10th. Only one adult returned in 1932, B69257, and was first recorded April 10th, a female nesting here in 1931. It will be noticed that the scarcity of returning adult Song Sparrows in 1932 left *three* gaps to be filled to complete the two pairs now nesting in the two territories occupied in 1930, 1931 and 1932.

That only four Song Sparrows were nesting here this season was quite apparent by early May. One male sang regularly from a small elm, and the other from an apple tree one hundred and

eighty feet from the elm. The two pairs did not visit each other's territories, but all four birds visited my ground trap for canary-seeds, one at a time, or occasionally in pairs. This trap was situated approximately one hundred and twenty-five feet from one territory and about one hundred and eighty feet from the other.

On May 27th it was decided again to establish the identity of the four nesting birds, and they were accordingly all trapped in the forenoon, one at a time. Two of the four nesting birds were B69411 and B69417, banded in 1931 as birds-of-the-year. The third bird was my only adult return Song Sparrow, B69257, which nested here also in 1931, and the fourth was a new bird banded by me May 18, 1932.

The above records are given for what they are worth. Alone, they are not conclusive in proving that the reason juvenile Song Sparrows do not nest here regularly year after year is because old returns preëmpt the nesting territories used, yet the facts recorded indicate that such may be the case, and they prove that occasionally young birds do nest in the same area in which they were born some ten months previously.

Peterboro, New Hampshire, May 20, 1932.

REPORT OF THE RECORDING SECRETARY OF THE NORTHEASTERN BIRD-BANDING ASSOCIATION FOR THE YEAR 1931

ONE hundred and fifty thousand birds, approximately, are now entered on the banding records of this Association. The totals which we give include those of the Austin Ornithological Research Station, where the work of several of our members reporting individually last year is included in the Research Station report. A separate account of the Station was published in the April, 1932, issue of *Bird-Banding*.

The total number of birds banded in 1931 was 27,202 (over four thousand more than last year), of one hundred and fifty species or races. Total returns were 1086, embracing 44 species. Included in these totals are the bandings and returns of William P. Wharton at Summerville, South Carolina. The species banded in largest numbers were Terns (Common, Arctic, and Roseate), 11,206; Song Sparrow, 1690; Junco, 1332; Purple Finch, 1289; Gulls (Laughing and Herring), 1137. The species returning in greatest numbers were Purple Finch, 185; Tree Sparrow, 162; Song Sparrow, 162; Chipping Sparrow, 154; Junco, 70.

Individual members banding the largest number of birds last year were: Mrs. Prince S. Crowell, 2572; William P.

Wharton, 1581 (in Groton, Massachusetts, and in Summerville, South Carolina); Mrs. Kenneth B. Wetherbee, 1011; James P. Melzer, 801; Richard M. Hinchman, 787; Mrs. J. F. Anthony, 529.

The following tabulation gives the returns by species:

RETURNS DURING 1931[1]

Species	*Number*
Black-crowned Night Heron	1
Red-legged Black Duck	1
Common Black Duck	1
Red-shouldered Hawk	1
Semipalmated Sandpiper	1
Herring Gull	1
Common Tern	6
Arctic Tern	1
Roseate Tern	2
Mourning Dove	9
Northern Flicker	4
Tree Swallow	17
White-breasted Nuthatch	7
Red-breasted Nuthatch	1
Brown Creeper	3
House Wren	7
Catbird	35
Eastern Robin	18
Eastern Hermit Thrush	3
Eastern Bluebird	7
Eastern Ruby-crowned Kinglet	1
Starling	4
Eastern Yellow Warbler	2
Myrtle Warbler	7
Northern Pine Warbler	2
American Redstart	4
Eastern Red-wing	4
Baltimore Oriole	2
Bronzed Grackle	1
Cowbird	9
Rose-breasted Grosbeak	13
Eastern Purple Finch	185
Eastern Goldfinch	13
Red-eyed Towhee	18
Eastern Savannah Sparrow	1
Eastern Grasshopper Sparrow	7
Eastern Vesper Sparrow	28
Slate-colored Junco	70
Eastern Tree Sparrow	162
Eastern Chipping Sparrow	154
Eastern Field Sparrow	32
White-throated Sparrow	78
Swamp Sparrow	1
Eastern Song Sparrow	162
Total	1086

ALICE B. HARRINGTON, *Recording Secretary.*

[1]This list includes returns of species both to nesting grounds and to wintering grounds.—EDITOR.

GENERAL NOTES

Winter Returns of the Indigo Bunting in Guatemala.—While studying the birds of Uaxactun, Guatemala, for the University of Michigan Museum of Zoölogy in 1931, I was interested to find the Indigo Bunting (*Passerina cyanea*) wintering in large flocks in the open grassy clearing. Flocks of scores were constantly to be seen feeding on grass seed. They came especially to the mule corral to pick up waste grain, and there I installed a simple automatic drop-trap baited with rice and immediately began catching them in numbers. Beginning March 31st, I operated the trap until the birds left for the North a month later, banding 99 birds and recording 120 repeats. The birds were quite tame, some repeating three or even four times a day. Banding operations soon showed that they were extremely sedentary, and toward the end of the month an ever increasing percentage of captures were repeats; this in spite of the fact that the species was common all over the clearing of hundreds of acres. On the morning of April 27th the species, which before had been always present at the corral, had disappeared. A circuit of the clearing revealed no Indigo Buntings. I thought they had left for the North, but on the 28th I saw again small flocks and noted bands on the legs of some birds. However, they were very restive, wandering about and not coming to the trap. On April 30th one was retaken in the trap and other banded birds were seen. The main flock probably left for the North that night, for we saw none thereafter, though two unbanded females were taken later (May 4th and 13th) in nets in the forest.

I was unable to return to Uaxactun in 1932, but my friend A. Ledyard Smith of the Carnegie Institution of Washington was there and with the aid of his loyal helper, Dixon, operated the trap again in the same spot. In spite of interference from livestock and other difficulties, they made the following interesting recaptures:—

A70403 ♂ banded April 1. Repeated April 7, 8 (twice), 9, 10, 11, 14, 17, 1931. Returned April 6 and 7, 1932.

F30345 ♂ banded April 13, 1931. Returned April 7, 1932.

F30346 ♂ banded April 13, 1931. Returned April 7, 1932.

F30284 ♀ banded April 4, 1931. Returned April 7, 1932.

F30358 ♂ banded April 15, 1931. Repeated April 16, 19, 20, 23, 1931. Returned April 8, 1932.

F30332 ♀ banded April 10, 1931. Returned April 9, 1932.

My observations and those of Mr. Smith would seem to indicate a flock of about a hundred Indigo Buntings wintering in a particular section of the Uaxactun clearing, probably migrating as a unit, and returning to winter the following year in the identical spot.—Josselyn Van Tyne.

The Fifth Return of Mallard No. 555414.—The interest that Mallard No. 555414 has aroused throughout the banding fraternity, makes it desirable to place on record her latest return.[1] Mr. F. J. Keller, on whose barn this bird has now nested for six consecutive years, has advised the Biological Survey that she returned to his station with a mate, on February 21, 1932. A heavy snowstorm on March second caused them to leave, but they were back again on March 16th. The duck made regular visits every morning to her nest box on the barn and started to lay on April 3d. By April 18th she had completed the unusually large set of fourteen eggs and had begun to incubate.

[1]For previous accounts of the history of this bird see *Bull. Northeastern Bird-Banding Association*, vol. V, No. 3, pp. 92-94, July, 1929, and *Bird-Banding*, vol. III, No. 1, p. 32, Jan., 1932.

All of the eggs hatched, and Mr. Keller had the pleasure of seeing the old duck get the ducklings off the barn early in the morning of May 12th. He reports as follows: "As I looked towards the barn this morning she was standing on the corner of the barn and the little 'fellers' were all strung out behind her. She kept up a low, soft quacking. . . . She unhurriedly flew straight down to the ground keeping up her low quacking. The little 'fellers' tried to imitate her, flying off the barn one at a time. As they landed in front of her they would immediately scramble to their mother. She would give one quick look at them as they landed on the ground and then immediately look back up to the barn for the next one. When the little 'fellers' were all down she slowly started towards the lake and by 7:30 A.M. . . . they were cavorting around . . . . catching bugs. She let them stay in the water about five minutes and then hunted up a dry spot on shore where she hovered them. It was a wonderful, nice, warm, and still morning. The lake was like a mirror and it was a satisfying sight to watch them."

Mr. Keller not only has contributed another valuable return record to the history of this Mallard duck, but he has also furnished a most interesting bit of life history. It is particularly noteworthy that this duck made no attempt to carry her young from their elevated nursery to the ground. As has been pointed out in the case of the Wood Duck, the newly hatched ducklings are little more than animated fluffs of down which offer enough resistance to the air to break effectually the velocity of their descent.—FREDERICK C. LINCOLN, Biological Survey, Washington, D. C.

Some Banding Results After Eleven Years of Banding at Sault Ste. Marie, Michigan, 1921 to 1931.

Total number of birds banded 18,459.

All but about half a dozen trapped birds and nearly 95 per cent of total trapped within seventy-five feet of my dining-room window.

TABULATED RETURNS ON ALL BIRDS BANDED

Returned same year banded		1
1st year after banding		915
1st and 2d years after banding		238
2d year after banding		176
1st, 2d, 3d years after banding		73
1st and 3d years " "		23
2d and 3d years " "		32
3d year " "		39
1st, 2d, 3d, and 4th years after banding		24
1st, 2d, and 4th years " "		7
1st, 3d, and 4th years " "		6
1st and 4th years " "		5
2d, 3d, and 4th years " "		11
2d and 4th years " "		2
3d and 4th years " "		1
4th year " "		12
1st, 2d, 3d, 4th, 5th years " "		5
1st, 2d, 3d, 5th years " "		1
1st, 2d, 4th, and 5th years " "		1
1st, 3d, 4th, and 5th years " "		2
1st, 2d, and 5th years " "		1
1st and 5th years " "		1
2d, 3d, 4th, and 5th years " "		2
3d and 5th years " "		1
5th year " "		1
1st, 2d, 3d, 4th, and 6th years after banding		1
1st, 2d 4th, 5th, and 6th years " "		1
1st and 6th years " "		1
2d and 6th years " "		1
6th year " "		3
1st, 2d, 3d, 4th, 6th, 7th years " "		1
1st, 2d, 3d, 4th, 6th, 7th, and 8th years after banding		1
		1590

As many birds return more than one year, the total of yearly returns exceeds the number of individual birds.

To get the number of individual birds, add the single-year returns in the above schedule. Thus:

Returned same year	1
1st year after banding	915
2d " " "	176
3d " " "	39
4th " " "	12
5th " " "	1
6th " " "	4
Total individual birds	1148
Species banded 1931	30
Species banded to date	77
Total Purple Finches alone banded	12,477
Yearly returns	1,361

RECOVERIES

Purple Finches	Near-by points	16	
	DeTour, Michigan	1	
	Kentucky	1	
	Tennessee	3	
	Arkansas	1	
	Louisiana	2	
	Texas	1	
	Georgia	1	
	Nova Scotia	1	
	Massachusetts	1	28
Evening Grosbeaks,	Near-by points	3	
	Upper Peninsula of Michigan West of Sault Ste. Marie	2	
	Southern Michigan	2	
	Minnesota	2	
	New York	1	
	Connecticut	1	
	Massachusetts	5	
	Quebec	2	
	Banded New Hampshire, recovered at Sault Ste. Marie	1	19
Robins	Near-by points	2	
	Louisiana	2	
	Florida	1	
	Ohio	1	6
Slate-colored Junco,	Near-by point	1	1
White-throated Sparrow,	Alabama	1	1
Northern Flicker,	Southern Michigan	1	1
			56

Since January 1, 1932, two more Purple Finches and one more Evening Grosbeak recoveries have come in. One Purple Finch from Kentucky, the other from Tennessee, and the Evening Grosbeak from southern Michigan.

One Purple Finch recovery from central Kentucky, one from southwestern Kentucky, two from central Tennessee, and two from west central Tennessee rather indicate that some of my Purple Finches winter in that general locality.

One from Southern Arkansas, two from southern Louisiana and one from eastern Texas point to a wintering of some in that part of the country. The two from Louisiana and the one from Texas were recovered the same winter—

1 shot December 26, 1929 at Giddings, Texas.
1 shot January 19, 1930 at Abbeville, Louisiana.
1 captured January 31, 1930 at Jeanerette, Louisiana.

Abbeville and Jeanerette are only about twenty-five miles apart. One of my Robin recoveries from Louisiana was January 3, 1928, at St. Martinsville a little further north but not over twenty miles distant from either of the above-mentioned places.

As to age, my returns show:

A Purple Finch to at least 10 years of age.
An Evening Grosbeak to at least 7 years.
A Chipping Sparrow, a Robin, a Yellow Warbler, and two Song Sparrows to be at least 5 years old.

	1931	*Total to Date*
English Sparrows destroyed	261	3,377
Cats trapped	48	197

All but one of the 48 trapped in 1931 were taken right on my front porch.

—M. J. MAGEE.

Eastern Red-winged Blackbird Returns.—At my station in Gary, Indiana, I have banded two hundred and thirty-eight Eastern Red-winged Blackbirds, as follows: 1926, sixty-two; 1927, one hundred and thirty-eight; 1928, twenty-three; 1929, fifteen. All of these birds were banded in my own yard, which is 125 feet by 300 feet, located here in the city. There is a swale, or swamp, surrounding the lower end of the yard, which, up to 1930, had not been drained. During the year 1930 a sewer was put through it, and it is now dry, and Blackbirds, while they come to my feeding station, do not breed here as formerly.

My returns of Red-wings are as follows:

42736, ad. male, banded May 22, 1926, returned to the same place April 17, 1928.
397925, ad. male, banded May 10, 1926, returned to the same place April 11, 1927.
397929, ad. female, banded May 11, 1926, returned to the same place May 8, 1927.
397933, ad. male, banded May 11, 1926, returned to the same place April 22, 1927.
397934, ad. male, banded May 11, 1926, returned to the same place April 21, 1927.
397941, ad. female, banded May 12, 1926, returned to the same place May 30, 1927.
397961, ad. male, banded May 15, 1926, returned to the same place April 10, 1927.
427364, ad. female, banded May 23, 1926, returned to the same place May 1, 1927.
437380, ad. male, banded May 13, 1927, returned to the same place April 20, 1929.
437376, ad. female, banded June 9, 1927, returned to the same place May 18, 1929.
357427, ad. male, banded June 26, 1927, returned to the same place April 20, 1929.
357432, ad. female, banded July 8, 1927, returned to the same place April 20, 1929.
440368, immature female, banded August 4, 1927, returned to the same place April 20, 1929.
580546, immature male, banded September 10, 1927, returned to the same place April 20, 1929.
580566, immature male, banded February 18, 1927, returned to the same place April 20, 1929.
592019, ad. male, banded April 22, 1929, returned to the same place May 13, 1929.

—CLARENCE BRETSCH, Gary, Indiana.

Winter Banding at Concord, New Hampshire.—At my woodland station I have taken only the usual species in this winter of 1931-1932, but certain returns and certain contrasts in numbers may be of interest to note here.

As to returns: a male Hairy Woodpecker (480636) was banded February 23, 1929, returned February 15, 1930, and January 14, 1932; a female (689961) was banded February 8, 1929, returned February 4, 1932. A female Downy Woodpecker (A423826) was banded February 28, 1930, returned January 14, 1931, and November 5, 1931, repeating in February. A White-breasted Nuthatch (B53062) was banded February 8, 1929, returned January 26, 1930, January 11, 1931, and November 12, 1931. A Tree Sparrow (B22148) was banded February 12, 1928, returned February 7, 1929, and February 18, 1932. There were also other

returns from one winter ago—a Downy Woodpecker, two Chickadees, and a Tree Sparrow. It will be seen that two Hairy Woodpeckers and a White-breasted Nuthatch were here for the fourth winter, and a Tree Sparrow for the fifth.

Certain species present a great contrast in the numbers present; the Tree Sparrows banded are as follows: January-March 1928, twenty-five; January-March 1929, twenty-six; January-March 1930, six; January-March, 1931, one; December-March, 1932, forty-one. No flock came this winter till February 6 after a heavy snow-fall. The Chickadees banded in January-March 1931, numbered twenty; in January-March 1932, one (I had, however, banded seven in November-December, 1931, some of which stayed on). Species not mentioned above that were banded this past winter, were Red-breasted Nuthatcher and Brown Creepers. At the end of March, three Song Sparrows were banded at the same spot, though never seen there before; a blizzard dammed up the migration, and presumably these birds were hard put to it and ranged about widely for food.

It is proper to state that as "returns" the status of most of the birds mentioned above is not absolutely satisfactory, because they are trapped in the winter months only. I should acknowledge considerable help from friends at my banding station, in particular from Messrs. W. L. Clark and W. L. Vaughan.—F. B. White, Concord, N. H., March 31, 1932.

A Longevity Record for the Hutchins' Goose.—In the popular mind geese are among the birds that may attain "a ripe old age," a belief that is supported by data available from zoölogical parks and aviaries. To Mr. Frank W. Robl, of Ellinwood, Kansas, the Biological Survey is indebted for the details concerning a Hutchins' Goose, band No. 105728, which apply to this subject.

This bird came to Mr. Robl's sanctuary in the spring of 1907, and died on February 5, 1932, apparently from natural causes. Accordingly, it was at least twenty-five years old, and as it was fully adult in 1907, it is probable that at least two or three additional years may be added. Although full-winged, it made no attempt to migrate with the other geese that regularly visited the sanctuary; instead it seemed content to remain and rear young under Mr. Robl's protection. Broods were raised successfully each season for the last ten years.

According to Mr. Robl, she "showed her age" very much during the last year of her life, and he thinks that the loss of her mate last fall was a contributory factor in causing her death. The bird has been mounted and will be so preserved.

The accompanying photograph, supplied by Mr. Robl, shows 105728 (center front) with some of her companions on one of the sanctuary ponds.—Frederick C. Lincoln, Biological Survey, Washington, D. C.

The Number of Eggs per Nest of the Vesper Sparrow.—The note in the January (1932) number of *Bird-Banding* by B. S. Bowdish indicates that there may be some variation in the number of eggs laid in individual nests by the Vesper Sparrow in different parts of its range. Some years ago I made a practice of noting the particulars of nests found, including the number of eggs or young. The results of these observations, as relating to the Vesper Sparrow, are tabulated below.

ARROW SHOWS HUTCHINS' GOOSE

Year	Month	Date	No. of Eggs	No. of Young	
1896	May	14	4		
	July	5	4		
1897	May	18	4		
	June	21	4		
1898	May	28	5		
	July	7	3		Fresh
1899	May	26	5		
	June	28	5		
	July	26	3	3	Just hatching
1900	May	21	5		Nearly fresh
	May	27		5	
	July	11	5		About hatching
	July	12		5	
	July	14	5		About hatching
1901	May	22	4		Fresh
	June	5		5	
	July	7	4		Nearly fresh
	July	7	2		Fresh
	July	10	3		Fresh
	July	14	3		Nearly fresh
1902	May	19	2		Fresh
	May	19	3		Fresh
	July	4	4		
1903	May	25	5		Addled
	May	25	5		Addled
	May	28	3		Fresh
	May	31		5	
	June	16	5		Nearly fresh
	June	25	5		
	June	27	5		
	June	27	4		
	July	16	3		Fresh
1904	May	24	1		Fresh
	May	24	3		Fresh
	May	30	3		Fresh
1904	June	25		4	
	July	3	4		Nearly fresh
1905	June	7	4		Addled
	July	26	3		Nearly fresh
1907	June	10	1		Fresh
	July	3	4		Almost fresh
	July	4	5		
	July	5	5		
	July	28		4	
	July	28	4		
1908	June	3	4		Nearly fresh
	June	4	5		Addled

It should be added that the above records were all made near my home at Aweme, Manitoba.—NORMAN CRIDDLE, Treesbank, Manitoba.

Two Possible Migrating Family Groups.—During the four-day period of October 10-13, 1931, five White-throated Sparrows (*Zonotrichia albicollis*) were banded at the writer's station in Wells River, Vermont. Of this number, one was an adult male, one was an adult female, and three were young. The number and age and sex-relationship of this group seem somewhat significant, and there are other facts which, in correlation with those mentioned, tend to enhance their possible significance.

At this station a garden is the usual seat of banding operations. Below the garden, a hillside covered with shrubbery slopes down to a narrow strip of woodland. Only about a half-acre is included in the shrub-covered area, and it is quite isolated from other tracts of a similar character. White-throated Sparrows do not nest there, and it is not frequented to any great extent by migrants of this species. During the migration of the fall of 1931 White-throated Sparrows were less numerous than usual there.

Two traps were placed in the shrubbery early in the fall of 1931. The first White-throated Sparrow taken during the season was trapped October 10th. An adult female, it was given band B155676. Fifteen minutes later an adult male wearing band number B155677 was released. On October 12th an immature bird of this species was given band B155678, and on the 13th two immature birds at periods one hour apart received bands B155679 and B155680 respectively. During the latter part of the four-day period, banded individuals of this species were seen about the traps, and one repeated. No White-throated Sparrows had been seen in the area for several days preceding October 10th, and none were seen there after the 13th, when these birds apparently disappeared.

Viewed in the light of these facts, the belief that this migrating flock was a family group seems quite plausible.

The other observation referred to in the title concerns a migrating flock of Eastern Red-wings (*Agelaius p. phœniceus*). These birds appeared at the writer's station in the early morning of October 9th, rested in a tree-top overlooking the station area, and, within an hour, passed on. The flock was composed of one adult male and six individuals in the dull plumage of the female and immature.—WENDELL P. SMITH, Wells River, Vermont, March 16, 1932.

Some Shrike Notes.—At 3:00 P.M., March 5th, a Loggerhead Shrike (*Lanius ludovicianus*) was found in one of my traps that had been set for finches and sparrows. He had eaten two finches and had killed another and a Song Sparrow. I did not wish to kill the shrike, nor did I want to close the trap for a day or two, so I kept him in captivity two days. When taken from the trap he weighed 45.8 grams; two hours later he weighed 44.6 gr., having lost 1.2 gr. At 7 A.M. next morning he weighed 41.4 gr., a loss overnight of 3.2 gr. At 3 P.M., that is twenty-four hours after the first weighing, he weighed 38.7 gr., a loss for the twenty-four hours 7.1 gr., or 15.6 per cent of his original weight. At this point I fed the shrike one of the finches he had killed the day before, and weighed him again in an hour and a half; he had gained 2.6 grams and had eaten all the edible portion of a finch weighing 14.9 gr. What became of the other 12.3 grams? Next morning at 7 A.M. he weighed 37.6 gr., or 1.1 gr. less than he weighed at the same time the previous morning—indicating that a finch was not sufficient food to maintain the shrike in captivity for a day. For his next day's rations I gave him the Song Sparrow he had killed two days previously. The Song Sparrow weighed 22.7 grams. After remaining in the cage twenty-four hours, the shrike weighed almost exactly what he did before eating the sparrow. This would indicate that at least that amount of food is needed to maintain an adult shrike for a day in sheer idleness in a darkened cage.

A white-bellied mouse was caught in a four-cell trap, and a second shrike, trying to get the mouse, entrapped himself. That was 7.30 A.M., March 31st. I thought it would make an interesting experiment to weigh them both, then feed the mouse to the shrike, and see how long that amount of food would maintain the shrike in captivity. I had gone to the trap without a gathering-cage, so I killed the mouse by crushing his skull between my fingers, and carried the bird in my hand. After weighing, I caged the shrike over a weighed sheet of blotting paper in order that we might accurately weigh the droppings and placed him in a quiet lighted basement to eat his breakfast. I returned in two hours to make the first check weight, but the mouse had not been eaten. Noon came,

and the mouse was still there. Three o'clock, then 6 P.M. and 9 P.M. all passed, and the mouse was still uneaten. At eight o'clock next morning the mouse was still untouched. Why? Certainly the shrike was hungry, and the mouse fresh and palatable. The first shrike had eaten a sparrow that had been dead two days, but he had done the killing himself. Is it possible that a shrike will eat nothing but his own kill?—RUSSELL S. DAVIS, Glenhaven Bird Sanctuary, Clayton, Illinois.

Age Record of Black-capped Chickadee 93789.—On July 27, 1924, I banded Chickadee 93789 at Cohasset, Massachusetts. The bird repeated the same season on September 14th and 28th, October 12th, November 29th, and December 12th. It was recaptured (probably as a repeat) in 1925 on March 9th and March 28th, and also in 1926 on February 22d and March 28th. In 1927 it was recaptured on January 8th and April 9th, and in 1928 on March 30th and October 27th. In 1929 and 1930 little trapping was done, so I have no record of the bird for these two years, but in 1931 it was recaptured on February 9th and March 15th. On this latter date the band was worn as thin as paper, so a new band was substituted, C46240 placed on the left tarsus. The bird was taken again on October 5th. In 1932 it repeated on February 28th. In view of the fact that the Chickadee was trapped in nearly every month of the year, it is deemed to be a permanent resident in Cohasset, all recaptures therefore being repeats. The bird is now at least seven and a half years old.—KATHARINE C. HARDING, Cohasset, March, 1932.

A Mockingbird Recovery.—Mockingbird A270337, banded by me at Summerville, South Carolina, on March 7, 1931, was captured alive in a private garage at Plymouth, North Carolina, on February 18, 1932, by Mr. L. W. Alexander. The bird was released unharmed. Mr. Alexander reports that he had observed this bird for several days prior to catching it, and also saw it for several days subsequently, but before very long it had disappeared. Since Plymouth is about two hundred and seventy miles in a straight line from Summerville, this is an interesting record for a species commonly regarded as sedentary.—WILLIAM P. WHARTON.

An Interesting Canada Goose Recovery.—Although nearly eight thousand Canada Geese have been banded at the Jack Miner Bird Sanctuary, Kingsville, Ontario, since 1915, the most interesting recovery has just been reported from British Columbia. Practically all the recoveries heretofore, amounting to hundreds, have been from east of Mississippi and from the east coast of Hudson and James Bays, but today's mail brought a report from Cranbrook, British Columbia, dated April 27, 1932, reading as follows:

> "*Dear Sirs:* I am enclosing an aluminum band which may be of interest to you. I am also giving you full information with regard to my getting it.
>
> A friend of mine has a small mineral claim near here in the East Kootenay District of British Columbia. This property was fire-swept last August when the forest fires were so bad here. This spring I went out with my friends to look things over and at the edge of a small lake we found the charred bones of what we believe was a coyote and of a bird, evidently a goose or swan. The enclosed band was on its leg."
>
> (signed) A. E. LEIGH.

The goose was banded in late November, 1927. JACK MINER BIRD SANCTUARY, Kingsville, Ontario, May 1, 1932.

A Return Song Sparrow a Victim of a Return Sparrow Hawk.—At the Austin Ornithological Research Station, hawks are occasionally taken in the traps, lured by other birds already captive. An interesting case of this sort occurred on March 21, 1932, when a Sparrow Hawk and its victim both proved returns. The hawk, an adult female, was banded September 27, 1931. In a corner of the trap was a mass of Song Sparrow feathers. The sparrow had been completely eaten, except, fortunately, for its banded right leg, which showed it to have been banded on May 4, 1931, and last taken on July 27, 1931. The hawk was released on the spot, and has given no further trouble up to the time of publication.—Maurice Broun, A. O. R. S., North Eastham, Cape Cod, Massachusetts.

Osprey Notes.—In *Bird-Banding*, Vol. III, April, 1932, Mr. John A. Gillespie gives some notes on the migration of Ospreys. He believes that the immature birds probably make the initial southward migration by an inland route and cites three recoveries to substantiate the theory.

I have banded immature Ospreys on Long Island as follows: twenty-five in 1928, six in 1929, and forty in 1931. Of the seventy-one banded I have had only three recoveries, as follows: 422611, banded June 30, 1928, and shot by S. S. Holland Master, sixty miles east of Cape Hatteras, North Carolina, on September 20, 1928; A700416, banded July 3, 1931, and shot at Middle Island, Long Island, on August 12, 1931; A700412 banded July 3, 1931, and caught in a steel trap on September 27, 1931, eight miles north of Hancock, Maryland, which is about one hundred and eighty miles from the coast.

It is only by banding a considerable number of these birds annually on the Atlantic Coast that the actual route of these birds can be found out. There are two large colonies of Ospreys on Long Island that could be well worked by banders who had the available time to band these birds—one colony of forty pairs at Orient and another colony of about two hundred pairs on Gardiner's Island—besides scattered pairs on the eastern end of Long Island. All the nests at Orient are built in the tops of cedar and oak trees, ten to twenty feet high, except two which are built on the ground. All nests on the northern end of Gardiner's Island, which is the only part I have worked, are built on the ground, so it is very easy to band the young birds. Three seems to be the usual number of young birds in a nest, though nests with two young are common. Of those that I banded there were six nests with one young bird each, nine nests with two young, fourteen nests with three young, and two nests with four young. —LeRoy Wilcox, Speonk, L. I., N. Y.

An Old Song Sparrow.—At my station in Sanbornton, New Hampshire, a Song Sparrow banded July 4, 1925, was recovered in a barn in Sheffield, Massachusetts, by M. Martin, April 3, 1932. The Biological Survey, in reporting this recovery, incorrectly gives July 9, 1925, as the date of banding, and states that the bird was probably released unharmed. The age of the bird is, therefore, at least seven years.—E. C. Weeks.

RECENT LITERATURE

Der Vogelzug, Vol. 3, No. 2, April, 1932. This number opens with an article by E. Schüz on early-summer migrations of Starlings and Lapwings. Results of banding work on Starlings reveal several interesting facts. Thus, Starlings breeding in Latvia linger from July to September in the region from East Prussia to Schleswig-Holstein, and occasionally remain there until October. Young Starlings raised in East Prussia leave the nest in the middle of June and wander about well into July in Danzig, Pommerania, Schleswig-Holstein, and Oldenburg, and during the true autumn migration to England, Holland, Belgium, and northern France. East Baltic Starlings migrate to such a degree that birds that remain in their birthplace are considered exceptional. The Starlings that invade East Prussia in June and July come from southern Finland, Esthonia, and Latvia.

Data on the Lapwing (*Vanellus vanellus*) indicate that it, too, indulges in early-summer wandering, previous to true migration in the autumn. This is also true of the Curlew (*Numenius arquatus*).

Groebbels records observations on the food of migrant birds at Helgoland. This paper is a sketchy, preliminary one and merely emphasizes the importance of nutritional changes during a time of such great physiological stress as that of migration.

Banzhaf writes on the autumn bird migration of 1931 at the "Greifswalder Oie" on the Baltic coast. He finds that westerly winds and only those between the compass-points of N.W. and S.W. (not N.N.W., etc.) favor migration. The daily flights of birds observed on this island were very considerable, on October 11th amounting to more than 10,000 birds of about twenty species. On the whole, daily flights tended to follow the long axis of the island, but often crossed it diagonally from N.N.E. to S.S.W. The different hours of the day most favored by different species of birds to begin their migrations from the island or to arrive there, are given for several forms. Annotated notes are given for a number of unusual birds seen there in 1931. The paper closes with some fragmentary notes on nocturnal migration.

Natorp contributes some reflections on the spring of 1931, dealing in a fragmentary, scattering way with a number of central European birds.

Schildmacher writes on the migration of the Hooded Crow (*Corvus cornix*) in the North Sea area. In general, he finds that the birds time their flight with the degree of duskiness at sunrise; by mid-day only small groups are left. Poor visibility seems not to hinder migration, if the atmosphere is not too densely fogged.

In the autumn of 1931 there was a remarkable invasion of Jays (*Garrulus glandarius*) in central Europe. Küchler uses this as a basis for a summary of the recorded invasions of this species, and gives such details as are available.

Duse writes on an enormous flight of Greater Spotted Woodpeckers (*Dryobates m. major*) in upper Italy in the autumn of 1931. A previous flight, in 1929, affected Denmark, Holland, and northern Germany, but did not reach Italy.

Schüz lists a number of corrections and additions of return records of banded birds to those published in the "Atlas des Vogelzugs."

Among the shorter notes are the following: the autumn migration of the Gull-billed Tern (*Gelochelidon nilotica*) in western Schleswig, by Emeis; the migration of the Bean-Goose (*Anser f. fabalis*) by Schüz; the first record of the Little Swamp Warbler (*Acrocephalus palustris*) in Morocco, by Drost, etc., etc.—H. F.

Ohio Game and Song Birds in Winter. By Lawrence S. Hicks. Ohio Department of Agriculture, Columbus, Ohio, 1932.

While bird-banding finds no place in this 68-page brochure, it contains much material which should be of considerable value to all who maintain either feeding or banding stations. It is divided into six parts, under such headings as "Emergency Feeding," "Report of Winter Feeding Experiments," "Conservation and Checks upon the Increase of Birds," "Planting and Management Recommendations," a winter bird-list, and a bibliography.

As might be expected, the emphasis throughout is largely upon the upland game-birds—Bob-white, Pheasant, and Hungarian Partridge—but there are several sections dealing with song-birds and other non-game species. A list of Ohio birds with their habitat requirements is followed by an excellent list of plants recommended for planting, with the names of birds which they may attract, and these contain many items of interest to the friends of our birds.

The work is so well done that it is perhaps captious to criticise it, but when, for example, Cormorants are said to be attracted by white and yellow pond-lilies, pondweeds, etc., we feel that an error, probably typographical, has crept into the work.

What Mr. Hicks has to say about human checks on bird life may well cause thoughtful consideration. "A bird sanctuary is a sanctuary first of all against *man*—too often man, human-like, accuses everyone but himself for his own mistakes. Man is the one biggest enemy of nearly all forms of wild life under present conditions. All other living predators are of minor importance—too often conservation is thought of as something to be practised by others."—J. B. M.

Movements of Ringed Birds from Abroad to the British Islands and from the British Islands Abroad. By H. F. Witherby and E. P. Leach. Reprinted from "British Birds," Vol. XXV, Nos. 5, 7, and 9.

This very interesting paper forms a pamphlet of over sixty pages, with some thirty-two maps, showing movements of ringed birds. It brings before one very vividly the difficulties incident to bird-study in Europe—where a comparatively short journey will carry one across several international boundaries, each of these meaning also a change in language—as compared with conditions in North America, where all banding work in the United States and Canada is carried on in one language. Birds which disperse no more widely than our Massachusetts Night Herons, in Europe would be recovered perhaps from a dozen foreign countries. And the bands on "foreign" birds recovered in the British Isles need the services of a skilled linguist to trace them back to their sources.

Some of the maps are exceedingly interesting. Four types of recovery are shown on the Starling map—nestlings ringed in other countries and recovered in Great Britain in winter, birds ringed in Great Britain in winter and recovered on the Continent, Continental migrants recovered in Great Britain in winter, and birds ringed in Great Britain in winter and taken as migrants or breeding birds on the Continent. The Cuckoo "shows a remarkable eastern trend," and the Wood Warbler "a more easterly route than any other British-breeding Passeres of which we have record."

The recovery of a British-banded Lapwing in Newfoundland in December, 1927, has been recorded in the *Bulletin New England Bird-Banding Association* for April, 1928, but the interesting fact that *all* the recoveries of Kittiwakes ringed in the Farne Islands, Northumberland, have been on this side of the Atlantic, has not been published here. I

believe. Three of the five are from Newfoundland, and one each from Labrador and Davis Strait. The recent taking of a Black-headed Gull in Massachusetts lends interest to the fact that European-ringed birds of this species have been recovered in Mexico, Barbados, and the Azores. There is much more of interest in the maps and itemized records, but all those interested in the travels of individual birds should read the article in full.—J. B. M.

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